

**Statement of Lynn Scarlett
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U.S. Department of the Interior
before the
Senate Energy Committee
Oversight Hearing on Onshore Renewable Energy on the Federal Lands
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Mr. Chairman, thank you for the opportunity to appear here today to discuss with you the Department of the Interior's role in managing renewable energy resources on the public lands.

Background

Rising gasoline prices and home heating and cooling bills are reminding Americans of how dependent we are on secure, reliable supplies of energy. Energy is vital to expanding our economy and enhancing Americans' quality of life. The Energy Policy Act of 2005 (EPAct) encourages the development of renewable energy resources as part of an overall strategy to develop a diverse portfolio of domestic energy supplies for our future. In fact, public and private wind and other renewable energy generating sectors of our economy are the fastest growing energy sources in the United States.

However, an imbalance exists between our energy consumption and domestic energy production. We are looking at ways to narrow the gap between the amount of energy we use and the amount we produce. Earlier this year, in the State of the Union Address, President Bush declared his continuing intention to secure America's energy future, which includes promoting dependable, affordable, and environmentally-responsible domestic energy production while reducing U.S. dependency on foreign oil. In passing the EPAct, Congress also signaled that it shares the President's goal of providing access to reliable domestic energy supplies that are crucial to the economic health and security of every American household and business. The EPAct creates incentives and streamlined procedures for Federal resource agencies to cooperate in meeting this challenge. The Department of the Interior (DOI) is doing its part in implementing these incentives. There is no single solution, but renewable and other alternative energy sources are integral components of our energy future.

While the quantity of domestic energy produced from renewable resources on Federal lands is small in comparison to conventional resources, the growing cost of conventional energy resources and the need to diversify our energy portfolio has spurred an increased interest and growth in renewable energy development. The Energy Information Administration's (EIA's) recently released 2006 Annual Energy Outlook estimates that our consumption of renewable fuels will grow approximately 60 percent from 6 quadrillion BTUs in 2004 to 9.6 quadrillion BTUs in 2025 as a result of advancements in renewable energy technologies, higher fossil fuel prices, State requirements to produce renewable energy, and incentives provided by the EPAct. The EIA estimates that in 2030

renewable energy will account for over ten percent of our domestic energy production and about seven percent of our consumption.

DOI, as the manager of over one fifth of the nation's land, has a significant role to play in this projected increase in domestic renewable energy production. Lands managed by the Bureau of Land Management (BLM) currently supply almost half of the nation's geothermal generation and over 5 percent of domestically- installed wind capacity. The potential for more renewable energy production is high according to the 2003 assessment by the BLM and Department of Energy's National Renewable Energy Laboratory of the potential for renewable energy production from public lands. The assessment indicated that 20 BLM planning units in seven western states have high potential for power production from three or more renewable energy sources.

New authorities and provisions in the EPAct have given DOI bureaus, such as the Minerals Management Service (MMS), the BLM, and the U.S. Geological Survey (USGS), the ability to explore the future development of promising new energy sources such as onshore and offshore wind, solar, and biomass energy; the EPAct also has provided bureaus, such as the U.S. Fish and Wildlife Service (USFWS), additional resources to help ensure these technologies are developed in an environmentally responsible manner.

I will discuss each of these energy sources, as well as alternative sources of fossil energy, and how they are integrated into DOI's energy programs. I also will discuss how DOI agencies are playing a leadership role in utilizing renewable energy resources at existing and new DOI facilities.

Production of Renewable Energy Resources

Wind

The BLM manages approximately 100 wind energy right-of-way (ROW) authorizations. Since 2001, the BLM has issued more than 90 wind energy ROW authorizations, compared to less than 5 issued from 1996-2000. Most of these authorizations are for testing and monitoring. Approximately 25 of the ROW authorizations are producing windfarms, with the capacity to produce 500 Megawatts (MW) of electricity – enough to meet annual electricity consumption of 420,000 homes based on EIA's average consumption statistics that a 1 MW plant running continuously at full power for a year could produce the amount of electricity consumed annually by 804 U.S. households.

In response to increased demand for wind energy, the BLM and the USFWS completed a programmatic wind energy EIS and a programmatic biological opinion in 2005 allowing 52 land-use plans in 9 western states to be amended. Completion of this EIS and the biological opinion was a significant accomplishment that should provide the foundation for the authorization of more than 3,200 MW of wind energy in an environmentally responsible manner. The BLM is reviewing several proposals that would more than double the capacity of wind generation on public lands. It is anticipated that applications

or authorizations for 300-500 MWs – of the 3,200 MW wind capacity identified in the EIS - will be processed in the next two years.

With the new authority under the EPAct, the MMS is working diligently to develop a regulatory program to authorize offshore alternative energy proposals, such as wind, solar, wave, and ocean current technologies. The Renewable Energy and Alternate Use Programmatic EIS, developed by the MMS, is currently open for public scoping. The EIS will form the foundation for the new alternative energy program and for future applications. The MMS expects to complete the programmatic EIS and rulemaking process by November 2007.

Solar

The BLM has received two ROW applications for large concentrated solar power commercial generating facilities encompassing 12,800 acres with an estimated output of 1,750 MW. The BLM is prepared to respond to additional industry interest for concentrated solar power use of the public lands based on a BLM Solar Energy Development Policy issued in 2004.

Geothermal

The BLM currently manages 354 geothermal leases, 55 of which are producing and provide geothermal energy to 34 power plants. Since 2001, the BLM has processed more than 200 geothermal lease applications, compared to 20 lease applications received from 1997-2001. Since the enactment of the EPAct, Nevada BLM has issued 25 geothermal leases. Another 97 applications filed prior to enactment are pending approval. In addition, the BLM manages a small number of direct-use leases, which provide an alternative source of energy for greenhouses, fish farms, and other commercial facilities. Demand for both electrical power and direct-use from Federal geothermal resources is expected to increase.

Over the past 5 years, the BLM has diligently worked to expedite the processing of pending geothermal lease applications on public lands. Since 2001, 199 leases have been issued, compared to 25 leases from 1996-2001. In 2004, the BLM completed a strategic plan to guide the agency in allocating resources for high priority geothermal activities.

The EPAct made comprehensive changes to the Geothermal Steam Act - the authorizing statute for geothermal development on public lands – by requiring land nominated and made available for leasing to be leased on a competitive basis; restructuring royalties; and revising lease terms, conditions, and rentals. As a result, the BLM and the MMS are rewriting their geothermal rules to conform to the statutory changes. The BLM authorizes geothermal development on Federal lands, and the MMS collects revenues owed to the Federal government and ensures these payments comply with applicable statutes and regulations.

To improve coordination in the geothermal leasing and permitting process, address pending leases, and develop a joint data system for geothermal activity, the BLM and

Forest Service (FS) signed an Interagency Memorandum of Understanding (MOU) in April 2006.

This year, the USGS began a three-year effort to update a nationwide geothermal resource assessment completed in the 1970's. The assessment will include estimates of electric power production potential from identified geothermal systems; estimates of the magnitude and general location of undiscovered geothermal systems; and evaluations of the impact of new geothermal technologies, such as Enhanced Geothermal Systems. The USGS is collaborating with other Federal, State, and local government agencies and the geothermal industry on a number of specific geothermal research projects, including new geothermal technologies, consulting with States developing and implementing Renewable Portfolio Standards (RPS), and providing technical advice to local agencies, Indian tribes and others seeking to develop geothermal projects.

Biomass

Utilization of biomass by-products from timber harvests and other activities on the public lands is an innovative market solution for reducing recurrent wildfire danger, disposing of wood waste, and expanding economic opportunities for local communities to develop energy generation industries. The BLM offered nearly 30,000 tons of biomass mostly through stewardship contracts in 2004, the first full year the BLM had this authority. In 2005, 71,000 tons of wood by-products were offered through contracts by the BLM. The target for 2006 is to offer 60,000 tons of biomass through contracts or agreements.

When treating areas for hazardous fuels reduction, the goal for 2006 is to offer biomass in 10 percent of the BLM's mechanical treatment projects, increasing to 50 percent by 2008. The BLM has also established six demonstration sites, which have a potential generation capability of 66 MW.

We have been working to sponsor conferences, participate in workgroups, and form partnerships to identify and remove barriers to biomass utilization. For example, BLM entered into a Memorandum of Understanding (MOU) with the Confederated Tribes of Warm Springs and FS in Central Oregon under which 80,000 dry tons (8,000 acres) of woody biomass material would be offered each year. The competitive offerings will be available beginning in FY 2008. Based on this MOU, the Tribe is seeking a power purchase agreement and bank financing to develop a 15.5 MW cogeneration plant.

A Declaration of Cooperation was signed in mid-January, 2006 in support of a Lakeview, Oregon Biomass Energy Facility. The BLM Lakeview District was one of 22 signatories, including businesses, governments, and non-profit organizations in support of this project. Some hurdles still need to be cleared before there are any ground-breaking activities to build the proposed power plant, which is planned to be 10-15 megawatts in size. The Oregon governor's office is touting this agreement as a prototype for other potential agreements throughout the state to achieve multiple objectives, including sustaining rural communities, dealing with high fire prone forests, and encouraging utilization of biomass in lieu of burning. One noteworthy item about this agreement is

that it garnered support from a broad cross-section of stakeholders from industry and conservation groups.

To aid in the utilization of biomass, in 2003, the Departments of the Interior, Agriculture, and Energy signed a Memorandum of Understanding agreeing to work together to promote the use of wood biomass. An interagency working group has been established under this Memorandum of Understanding and will report to the Biomass Research and Development Board.

Early in 2004, the Secretary of the Interior charged DOI bureaus with development of a coordinated biomass implementation strategy. Under this direction, and using the authorities provided in the Healthy Forests Initiative, the National Fire Plan, stewardship contracting, and the Healthy Forest Restoration Act, the BLM implemented its strategy for increasing biomass utilization from BLM-managed lands.

DOI also adopted a standard contract provision that allows for the removal of biomass as part of all forest and rangeland thinning projects or any other contracts that cut vegetation. This contract option is for use by all DOI bureaus. In addition, Section 210 of the EPAct authorizes Federal grants for biomass use. The BLM is working with the FS to implement a joint biomass action plan and foster new markets in biomass utilization. To help increase the market for materials made of small wood and wood biomass, the agency has added a factor to their procurement solicitations to encourage the purchase of bio-based materials.

Alternative Sources of Fossil Energy

DOI is also facilitating the development of alternative sources of energy from unconventional fossil fuel resources, such as gas hydrates, which, while currently uneconomic to commercially develop, present enormous potential for domestic energy production in the years to come.

Gas Hydrates

Gas hydrates are naturally occurring solids in which water molecules trap gas molecules (usually methane) in a cage-like structure. Gas hydrates are widespread in permafrost regions and areas offshore and have the potential to contribute significantly to the world's gas supply. The most recent assessment of gas hydrate potential for the United States was conducted by the USGS in 1995. The USGS estimated that the United States had more than 200,000 Trillion Cubic Feet (TCF) of in-place gas hydrate resources, compared to current estimates of approximately 1,200 TCF of natural gas from conventional sources. More than 98 percent of this potential resource is believed to exist offshore. Currently, the nation consumes approximately 24 TCF on an annual basis.

Although there is no current commercial production of gas from known gas hydrates deposits, recent studies have demonstrated that production of these resources is technologically feasible.

Research into gas hydrates has been conducted for approximately 25 years, and the level of knowledge about the occurrence and potential recoverability of gas hydrates has evolved. Promising results have been shown in Alaska. With this new knowledge, the MMS, in co-operation with the USGS and leading academic researchers, is currently in the process of reassessing the extent of potential quantities of in-place gas hydrates on the Outer Continental Shelf and MMS will be the first to assess the technically recoverable resource.

The MMS has focused its hydrate activities on assessing and evaluating hydrate resources and assuring that industry hydrate exploration and development activities can occur in a safe and an environmentally sound manner. In addition to partnering with USGS in developing a methodology for assessing offshore gas hydrates and performing a new resource assessment, the MMS is also developing a detailed tract-specific methodology that would be used as the basis to determine fair market value assuming production of this resource eventually becomes economic. The methodology will provide significantly more specificity on the location of the resource.

The USGS, the BLM, and the State of Alaska are currently in the process of reassessing the potential quantities of technically recoverable gas hydrates on the North Slope of Alaska – the first ever technically recoverable resource estimate of its kind. This estimate will support the BLM and the Alaska Department of Natural Resources resource management responsibilities.

Working with other Federal agencies, DOI has established goals to (1) improve our understanding of the various aspects of gas hydrate occurrence in the natural environment, (2) improve our detection abilities via various geophysical techniques, including remote sensing, and (3) improve our understanding of potential production techniques and the behavior of hydrates during production, including reservoir performance and fluid behavior.

DOI is evaluating the need for rulemaking to encourage natural gas production from gas hydrates as directed by Section 353 of EPAct.

Utilization of Renewable Energy Resources at DOI Facilities

In addition to DOI's significant role in domestic renewable energy production, bureaus within DOI are taking on a leadership role by working to advance the use of renewable energy resources at numerous facilities in the field. There is significant potential for the installation and use of renewable energy resources, such as solar, geothermal, and wind power at existing and new DOI facilities.

The BLM generates a total of 185 Megawatt-hours of electricity from photovoltaic systems each year from over 600 installations. Varied uses of photovoltaics include water pumping, outdoor lighting, communication sites, weather and water monitoring, remote field stations, and visitor centers. Since 1995, the BLM has installed over 130 photovoltaic systems to replace fossil-fuel powered generators. The seasonal nature of

the remote facilities and long summer sun hours have made solar energy a cost effective approach to supplying power to these facilities. Some examples of solar photovoltaic projects undertaken at the BLM facilities include:

- Grid-connected systems at the Cannonville and Big Water Visitor Centers (Utah); and the Vale Fire Dispatch Center (Oregon);
- Outdoor lighting systems at various recreation sites along the Colorado River near Yuma and on Lake Havasu (Arizona);
- Upgrades to the Nixon system (Arizona) to meet the needs of the new 3,000 sqft fire station;
- Water pumping and water treatment at the Clay Creek Recreation Site (Oregon);
- Water pumping on a remote stock and wildlife site water system (Idaho);
- Off-grid system (3 kW) at the Washburn Ranch, Carrizo Plain National Monument (California); and
- Grid-connected system (7.5 kW) at Escalante Science Center, Grand Staircase-Escalante National Monument (Utah).

The National Park Service (NPS) also is utilizing innovations in solar power at facilities throughout the National Park System. The Zion National Park Visitor Center, designed collaboratively by the NPS and the Department of Energy's National Renewable Energy Laboratory, uses 66 percent less energy than code and is virtually immune to the frequent power outages in the region. The project represents a synthesis of passive heating, cooling and daylighting, energy efficiency, and photovoltaic technology. Shading, natural ventilation, passive evaporative cool-towers, clerestories, trompe walls, direct solar gain, thermal mass, high efficiency lights, and 7 kilowatts of photovoltaics all work together to nearly eliminate loads. The project resulted in cost savings of more than \$10,000 and 309 million Btu in site energy and 1 billion Btu in source energy.

At Mojave National Preserve, the NPS has constructed a new Wildland Fire Center that is highly functional, energy efficient, and cost effective. The Center features an 11 kilowatt hybrid system with 85 thin flexible photovoltaic panels placed on the roof, eliminating the expense of a solar panel array frame. In interior spaces without windows, solar light tubes practically eliminate the need for electrical lighting during the day. A solar-powered radiant floor heating system prevents the water lines in the fire engine bays from freezing. The project has achieved an energy savings of 624 million Btu and a cost savings of more than \$16,000 in one year. At the White River Entrance of Mount Rainier National Park, the NPS has constructed a 20-kilowatt solar hybrid system, which brings reliable electrical power to a remote area without a connection to an electric utility. The new system is saving the White River installation more than \$9,000 in fuel costs and approximately 776 million Btu annually.

The Bureau of Indian Affairs improved energy conservation at Sherman Indian High School by installing new lighting, heating, ventilation, and a renewable energy photovoltaic system. These and other improvements helped achieve a savings of more than 8 billion Btu and more than \$179,000.

At Missisquoi National Wildlife Refuge, the FWS has worked collaboratively with community partners, Efficiency Vermont, the State of Vermont, the Town of Swanton, and a design team led by Centerbrook Associates on a new headquarters and visitor contact station that exemplifies the principles of sustainable design. This facility, dedicated on October 15, 2005, minimizes energy use, makes efficient use of resources, and reflects sensitivity to the site. Achievements of the project include selection of recycled-content materials, passive solar energy design, energy efficiency, water conservation and runoff treatment, and sustainable architecture. Its renewable energy systems capture geothermal, solar, and wind energy with a geothermal heating, ventilation, and air conditioning (HVAC) system; a 15 kW photovoltaic solar array; a Bergey 10 kW wind turbine; and an energy-efficient lighting and controls system.

At the Parker River National Wildlife Refuge, the USFWS incorporated the use of recycled building materials and low-VOC building materials, including engineered wood, plastic lumber, linoleum flooring, fiberboard, sheetrock, exterior decking, tile, deck piers, and carpet with high recycled content in the construction of the visitor center and administrative headquarters. Water conservation technologies, including directing roof runoff to groundwater recharge, installing low-flush toilets, and implementing other best water management practices, save thousands of gallons of water per year. Passive solar techniques such as southeast building orientation and daylighting, along with super insulation of the building envelope and high-efficiency lighting with self-adjusting dimmers significantly reduce energy use over a traditional office building.

Conclusion

In conclusion, Mr. Chairman, energy is vital to expanding our economy and enhancing Americans' quality of life, and producing energy from renewable and other alternative domestic resources is a critical component of the Nation's energy portfolio. Lands managed by DOI have a major role to play in the diversification of the Nation's energy sources while ensuring protection of habitat and mitigating impacts to wildlife, cultural and natural resources. DOI also will continue to lead by example, utilizing renewable energy resources at existing and new DOI facilities.

DOI has been working with other agencies and has taken steps in a variety of scientific endeavors to understand renewable and other alternative energy resources and to help bring them to a place where they may contribute to the energy mix of the country. Even the development of renewable energy resources requires surface acreage, and DOI manages millions of acres of land, many of which has energy potential. The BLM and MMS have been working on a variety of fronts to meet industry demand for renewable and other alternative sources of energy. The USGS has been leading scientific investigations to improve our understanding of these energy resources. We stand ready to respond to the ever-increasing need for energy development from the resources we manage on behalf of the Nation.

Thank you for the opportunity to highlight a few of the steps the Department of the Interior has taken to encourage the development of renewable and other alternative energy resources on the public lands.

Renewable energy will be extremely important in delivering larger supplies of clean, domestic power for America's growing economy. This concludes my testimony. I would be happy to answer any questions you have.